United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

July 2, 1982

SUBJECT: Report on Field Tests of Swormlure-4 in Mexico

TO: Dr. Nazario Pineda V., Director
Dr. R. E. Reichard, Acting Co-Director
Comision Mexico-Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12° Piso
Apartado Postal M-2890
Mexico, D. F. 06000

As promised in my memorandum dated June 17, I am forwarding a copy of a report prepared by Drs. Dennis Ring and Harold Brown which describes their field tests of swormlure conducted in Mexico from February to May 1982. After demonstrating that in Nayarit SWASS pellets containing 23% Swormlure-2 were no more attractive to screwworm flies than pellets with 17% Swormlure-2, they turned their attention to comparisons between Swormlure-2 and Swormlure-4 (formerly referred to as ZP-31).

The report contains the data accumulated in two comparisons of SL-2 vs. SL-4 in Colima and another comparison in Tamaulipas. You will note in Table 2 that in Colima (two tests combined), pellets containing SL-4 attracted 3.16X more screwworms than those containing SL-2. In Tamaulipas the ratio was 1.69 to 1 in favor of SL-4. In tests with liquid swormlure in WOT's, SL-4 was 1.76X more effective in Colima (two tests combined) and 1.16X more effective in Tamaulipas. The numbers of fertile flies trapped was quite small but it is of interest that 12 of 14 were caught in traps baited with SL-4.

Other evaluations are needed, and are in progress, but I feel that we were justified in recommending that you use SL-4 in the manufacture of SWASS pellets instead of SL-2.

O H Graham

O. H. GRAHAM
Location/Project Leader

cc: w/encl.

Norvan Meyer	C. J. Whitten
Floyd Smith	J. R. Johnston
W. H. Sudlow	R. C. Bushland
H. C. Hofmann	J. P. Spencer
R. E. Lowe	J. W. Mackley
R. A. Bram	H. E. Brown
J. W. Snow	D. R. Ring

REPUBLIC OF THE PHILIPPINES
PHILIPPINE ATOMIC ENERGY COMMISSION
Don Mariano Marcos Avenue, Diliman,
Quezon City

RECEIVED JUL 0 6 1982

Telephone No. 97-60-11 to 15
P.O. Box No 932 Manila
Cablegram PHILATOMIC

25 June 1982

Dr. O.H. Graham
Location/Project Leader
Screwworm Research
P.O. Box 986
Mission, Texas
78572

Dear Dr. Graham,

Thank you very much for your letter of June 16 and for the reprints you sent with it. We found them very useful in our work. I have already written Dr. J.P. Spradhery regarding Chrysomya bezziana which may be a close relative of our species here in the Philippines.

I would like to inquire if we could also request for some free samples of swormlure for testing in our laboratory. If it is not possible, I would appreciate it very much if you could supply us the name of the company to whom we could request the said chemical.

We would appreciate any assistance you can extend to us and hope to hear from you.

Very truly yours,

Eugenia C. Manoto
EUGENIA C. MANOTO
Senior Sci. Res. Specialist

REPUBLIC OF THE PHILIPPINES
PHILIPPINE ATOMIC ENERGY COMMISSION
Don Mariano Marcos Avenue, Diliman
Quezon City

RECEIVED JUL 0 6 1982

Telephone No. 97-80-11 to 15
P.O. Box No. 535 Manila
Cable Address PHILATOMIC

25 June 1982

Dr. O.H. Graham
Location/Project Leader
Sorghum Research
P.O. Box 956
Mission, Texas
78572

Dear Dr. Graham,

Thank you very much for your letter of June 16 and for the reprints you sent with it. We found them very useful in our work. I have already written Dr. G.V. Spradbery regarding Chrysomya bezziana which may be a close relative of our species here in the Philippines.

I would like to inquire if we could also request for some free samples of sevramure for testing in our laboratory. If it is not possible, I would appreciate it very much if you could supply us the name of the company to whom we could request the said chemical.

We would appreciate any assistance you can extend to us and hope to hear from you.

Very truly yours,

EUSEBIA C. MANOTO
Senior Sci. Res. Specialist

Dr. Graham

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

July 8, 1982

SUBJECT: Report on Field Tests of Swormlure-4 in Mexico

TO: Dr. H. Del Var Petersen
USDA, SEA, AR
P. O. Drawer GE
College Station, Texas

I am enclosing a copy of a report recently prepared by Dennis Ring and Harold Brown. You saw a previous version of this report last week but we have since made some corrections in Tables 6, 7, 8, and 9.

I would very much appreciate any comments and advice you might care to offer about the design of the tests and the biostatistical analysis presented in Table 1. Your comments will be very helpful when these data are prepared for publication and in the design of future similar tests.

Hugh

O. H. GRAHAM
Location/Project Leader

cc: w/encl.
D. R. Ring
H. E. Brown
R. A. Hoffman

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

July 8, 1982

SUBJECT: Report on Field Tests of Swormlure-4 in Mexico

TO: Dr. Nazario Pineda V., Director
Dr. R. E. Reichard, Acting Co-Director
Comision Mexico-Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12° Piso
Apartado Postal M-2890
Mexico, D. F. 06000

Plese replace Tables 6, 7, 8, and 9 in the report forwarded to you by my memo of July 2 with the enclosed corrected tables.

O. H. GRAHAM
Location/ Project Leader

cc: w/encl.
Norvan Meyer
Floyd Smith
W. H. Sudlow
H. C. Hofmann
R. E. Lowe
R. A. Bram
J. W. Snow
C. J. Whitten
J. R. Johnston
R. C. Bushland
J. P. Spencer
J. W. Mackley
H. E. Brown
D. R. Ring

Table 6.-The percent weight of each component in swormlure from 0-4 days post-exposure in Amatlan de Cañas, Nayarit, Mexico in early February.

Swass Pellets

Component	17% Swormlure-2 Day 0	1	2	3	4	23% Swormlure-2 Day 0	1	2	3	4
sec-butyl alcohol	.3	.1	0	0	0	2.3	.6	.2	0	0
iso-butyl alcohol	.5	.2	.1	.1	0	2.3	.8	.3	.1	0
dimethyl disulfide	0	0	0	0	0	1.8	0	0	0	0
acetic acid	2.0	1.5	1.3	1.1	.9	3.2	2.3	1.7	1.4	1.1
butyric acid	2.0	1.8	1.8	1.7	1.5	2.4	2.3	2.2	2.1	1.8
valeric acid	2.2	2.1	2.1	2.0	1.9	2.6	2.7	2.6	2.6	2.4
phenol	2.0	2.0	2.0	1.9	1.7	2.6	2.8	2.7	2.6	2.4
p-cresol	2.4	2.3	2.4	2.3	2.1	2.7	3.0	3.0	2.9	2.8
benzoic acid	.7	.8	.6	.6	.7	.9	1.0	.7	1.6	.9
indole	.4	.3	.2	.2	.2	.6	.7	.6	.7	.6

Component	Liquid Swormlure-2 Day 0	4
sec-butyl alcohol	11.2	11.1
iso-butyl alcohol	10.5	10.0
dimethyl disulfide	11.3	10.2
acetic acid	13.1	12.8
butyric acid	12.8	13.1
valeric acid	12.2	12.6
phenol	10.9	11.0
p-cresol	11.2	11.5
benzoic acid	2.6	2.5
indole	2.6	2.4

CORRECTED COPY

Table 6.--The percent weight of each component in aqueous fore gut post-extracts in Anacleto de Cabos, Negrete, Mexico in early February.

Table 7.-The percent weight of each component in swormlure from 0-9 days post-exposure in Manzanillo, Colima, Mexico in early March.

Swass Pellets

Rep 1

Component	Swormlure-2 Day 0	1	2	3	4	Swormlure-ZP-31 Day 0	1	2	3	4
sec-butyl alcohol	2.0	.5	.1	.1	0	4.1	.5	0	0	0
iso-butyl alcohol	2.0	.7	.3	.2	.1	4.2	.9	.1	0	0
dimethyl disulfide	1.6	0	0	0	0	2.7	0	0	0	0
acetic acid	2.8	2.2	1.9	1.4	1.2	4.7	3.3	2.7	1.7	1.5
butyric acid	2.4	2.2	2.3	1.9	1.8	1.5	1.4	1.2	1.0	1.0
valeric acid	2.4	2.4	2.4	2.0	2.0	1.6	1.6	1.5	1.3	1.3
phenol	2.4	2.3	2.3	2.0	2.0	1.2	1.2	1.2	1.0	1.0
p-cresol	2.5	2.6	2.7	2.4	2.3	1.5	1.6	1.6	1.4	1.4
benzoic acid	0.2	1.1	1.0	.8	.8	.2	.8	.5	.8	.3
indole	0.5	.5	.4	.4	.3	.3	.3	.2	.2	.2

Rep 2

Components	Swormlure-2 Day 0	1	2	3	4	Swormlure-ZP-31 Day 0	1	2	3	4
sec-butyl alcohol	2.1	.4	-	0	-	4.3	.5	0	0	-
iso-butyl alcohol	2.2	.7	-	.1	-	4.3	.9	.1	.1	-
dimethyl disulfide	1.6	0	-	0	-	2.8	0	0	0	-
acetic acid	2.9	2.1	-	1.3	-	4.8	3.2	2.4	1.7	-
butyric acid	2.0	2.2	-	1.7	-	1.6	1.2	1.1	1.0	-
valeric acid	2.1	2.2	-	2.0	-	1.6	1.4	1.3	1.2	-
phenol	2.3	2.3	-	1.9	-	1.3	1.2	1.1	1.0	-
p-cresol	2.6	2.6	-	2.3	-	1.7	1.5	1.5	1.4	-
benzoic acid	1.2	.8	-	.7	-	.6	.6	.6	.5	-
indole	.5	.4	-	.3	-	.3	.3	.2	.2	-

Table 7 continued.

Component	Liquid									
	Swormlure-2					Swomlure-ZP-31				
	Day					Day				
	0	3	5	7	9	0	3	5	7	9
sec-butyl alcohol	11.4	10.7	10.6	10.4	9.9	18.8	18.8	18.7	18.2	19.4
iso-butyl alcohol	10.6	9.6	9.5	9.0	8.5	18.1	18.1	17.5	17.4	17.7
dimethyl disulfide	12.8	10.1	10.9	8.9	8.9	18.5	17.3	15.9	9.8	13.5
acetic acid	13.4	12.4	12.6	12.0	11.4	17.7	17.2	17.3	18.1	18.1
butyric acid	13.0	12.6	12.6	12.7	12.1	6.3	6.7	6.9	7.6	6.6
valeric acid	12.3	13.3	13.3	13.6	13.7	6.0	7.3	7.5	8.8	6.9
phenol	10.3	11.2	11.2	11.4	11.3	4.2	4.8	4.9	5.5	4.5
p-cresol	10.8	13.0	13.0	12.9	13.8	5.3	6.9	7.4	9.0	6.5
benzoic acid	2.7	3.1	13.1	3.4	3.6	1.2	1.2	1.3	1.6	1.2
indole	2.7	3.0	3.0	3.0	3.1	1.0	1.3	1.4	1.6	1.0

CORRECTED COPY

Table 8.-The percent weight of each component in swormlure from 0-7 days post-exposure in Manzanillo, Colima, Mexico in late March.

Component	Swass Pellets							
	Swormlure				Swormlure-ZP-31			
	Day				Day			
	0	3	5	7	0	3	5	7
sec-butyl alcohol	1.7	0	.2	0	4.4	0	0	0
iso-butyl alcohol	1.8	.1	.3	0	4.2	0	0	0
dimethyl disulfide	1.3	0	0	0	3.2	0	0	0
acetic acid	2.7	1.3	1.3	.7	4.7	1.4	1.2	.7
butyric acid	2.5	1.9	1.7	1.5	1.6	1.1	.9	.9
valeric acid	2.2	2.0	1.8	1.8	1.5	1.4	1.2	1.2
phenol	2.3	2.0	1.8	1.8	1.2	1.1	1.0	.9
p-cresol	2.4	2.3	2.2	2.2	1.5	1.6	1.4	1.4
benzoic acid	.5	.7	.7	.6	.3	.5	.5	.5
indole	.4	.3	.2	.2	.3	.2	.2	.1

Component	Liquid							
	Swormlure-2				Swormlure-ZP-31			
	Day				Day			
	0	3	5	7	0	3	5 1/	7
sec-butyl alcohol	11.4	10.5	10.0	9.5	19.9	15.2	13.8	17.5
iso-butyl alcohol	10.3	9.8	8.6	8.1	19.0	13.6	12.9	15.8
dimethyl disulfide	12.1	10.0	9.5	8.7	19.4	12.8	9.3	12.8
acetic acid	13.4	11.8	11.6	11.2	19.1	15.8	12.9	16.4
butyric acid	12.8	12.4	12.5	12.8	6.6	8.6	8.1	7.7
valeric acid	12.6	13.8	14.1	14.3	6.2	10.0	12.4	9.4
phenol	11.3	11.4	11.8	12.2	4.3	6.8	7.3	6.2
p-cresol	11.9	13.0	14.1	14.3	5.6	9.8	13.2	9.8
benzoic acid	2.5	2.1	3.9	3.8	1.1	1.5	2.7	2.0
indole	2.6	3.2	3.3	3.2	1.0	1.8	2.8	1.8

1/ one sample only, squeezed from wick

CORRECTED COPY

Table 9.-The percent weight of each component in swormlure from 0-12 days post-exposure at La Pesca, Tamaulipas, Mexico in late April.

Component	Swass Pellets											
	Swormlure-2						Swormlure-ZP-31					
	Day						Day					
	0	3	5	7	9	12	0	3	5	7	9	12
sec-butyl alcohol	1.6	0	0	0	0	0	3.9	0	0	0	0	0
iso-butyl alcohol	1.6	0	0	0	0	0	3.5	0	0	0	0	0
dimethyl disulfide	.9	0	0	0	0	0	1.3	0	0	0	0	0
acetic acid	2.8	.9	.8	.6	.5	.3	4.3	1.0	.5	.4	.3	.2
butyric acid	2.2	1.5	1.4	1.3	1.1	.9	1.3	.7	.6	.5	.4	.3
valeric acid	2.6	2.0	1.9	1.9	1.8	1.5	1.5	1.2	1.0	.9	.9	.7
phenol	2.4	1.9	1.8	1.8	1.7	1.4	1.1	.9	.8	.7	.7	.5
p-cresol	2.6	2.3	2.2	2.2	2.1	1.9	1.3	1.2	1.1	1.0	1.0	.8
benzoic acid	.5	.7	.6	.6	.6	.5	.5	.4	.4	.4	.4	.3
indole	.5	.3	.3	.3	.3	.2	.3	.2	.2	.2	.2	.2

Table 9 continued.

Component	Liquid											
	Swormlure-2						Swormlure-ZP-31					
	Day						Day					
	0	3	5	7	9	12	0	3	5[1]	7	9	12[2]
sec-butyl alcohol	11.7	9.7	10.4	9.3	9.1	7.5	19.7	20.0	19.0	14.8	13.8	11.0
iso-butyl alcohol	9.1	9.0	9.0	8.1	7.9	6.5	18.6	18.7	17.3	13.9	12.7	11.7
dimethyl disulfide	11.3	4.9	10.4	8.9	8.7	4.6	18.6	11.1	15.9	8.9	7.0	0
acetic acid	13.4	12.8	13.0	11.8	11.4	9.6	19.0	19.1	18.2	14.3	13.5	15.2
butyric acid	12.2	13.4	12.4	12.5	12.3	11.5	6.0	7.1	6.5	6.5	7.3	7.1
valeric acid	12.0	13.7	13.0	14.0	14.1	14.0	6.2	8.1	7.3	10.3	11.8	11.4
phenol	10.8	12.1	11.3	11.7	11.6	11.3	4.1	5.4	4.8	6.0	7.4	6.6
p-cresol	10.9	13.0	11.9	13.2	14.2	15.1	4.6	6.7	6.1	11.1	12.6	14.3
benzoic acid	2.5	3.3	2.7	3.8	4.3	4.9	1.1	2.1	1.8	6.1	5.5	16.8
indole	2.6	3.0	2.5	3.2	3.6	3.5	1.2	1.8	1.5	3.4	3.6	5.8

1/ one sample

2/ wick extracted to make one sample.

CORRECTED COPY

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwwrom Research
P. O. Box 986
Mission, Texas

July 9, 1982

Dr. Eugenia C. Manoto
Senior Science Research Specialist
Philippine Atomic Energy Commission
Diliman, Quezon City
Philippines

Dear Dr. Manoto:

In reply to your letter of June 25, we would be happy to supply you with a sample of swormlure, but we have no means of shipping it to you. In addition to its strong unpleasant odor, the material is quite caustic and cannot be shipped by the postal service or the airlines.

Either swormlure-2 or swormlure-4 can be easily prepared in a chemistry laboratory equipped with a good fume hood using the proportions listed on the enclosed tabulation. Our experience in southern Mexico suggests that swormlure-4 will probably be more effective than swormlure-2 in a high rainfall tropical region. You will remember however that swormlure is specific for screwworms and one of its advantages in our program has been that other species of blowflies are rarely attracted to it.

Sincerely,

O. H. GRAHAM
Location/Project Leader

Enclosure

cc: w/encl.
H. E. Brown

Composition of swormlure

Chemical	% w/w SL-2	% w/w SL-4
isobutyl alcohol	10.5	18.7
sec. butyl alcohol	10.3	18.7
acetic acid	13.7	18.7
dimethyl disulfide	12.0	18.7
butyric acid	12.5	6.2
valeric acid	12.2	6.2
phenol	12.1	5.0
para-cresol	11.5	5.0
indole	2.6	1.2
benzoic acid	2.6	1.2

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
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P. O. Box 986
Mission, Texas

July 9, 1982

Dr. Eugenia C. Manoto
Senior Science Research Specialist
Philippine Atomic Energy Commission
Diliman, Quezon City
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Sincerely,

O. H. Graham

O. H. GRAHAM
Location/Project Leader

Enclosure

cc: w/encl.
H. E. Brown

Composition of swormlure

Chemical	% w/w SL-2	% w/w SL-4
isobutyl alcohol	10.5	18.7
sec. butyl alcohol	10.3	18.7
acetic acid	13.7	18.7
dimethyl disulfide	12.0	18.7
butyric acid	12.5	6.2
valeric acid	12.2	6.2
phenol	12.1	5.0
para-cresol	11.5	5.0
indole	2.6	1.2
benzoic acid	2.6	1.2

Dr. Graham

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwwrom Research
P. O. Box 986
Mission, Texas

July 9, 1982

FOREIGN TRAVEL REPORT

1. Traveler. D. R. Ring, Research Entomologist, TAES, Screwworm Research, Mission, Texas, NRP 20408.

2. Countries Visited. Tuxtla Gutierrez, Tapachula and San Cristobal, Chiapas, Mexico.

3. Purpose of Trip. Communicate with ARS and Commision scientists and other personnel concerning objectives and design of experiments, equipment available, equipment needed, visit study areas and visit screwworm rearing plant.

4. Summary. Met with Drs. Mackley, Peterson and Spencer, USDA, ARS for discussion of research facilities, technical help, equipment, supplies and problems. Visited research facilities and took inventory of equipment and supplies at Tuxtla. Two technicians have recently been hired by Dr. Spencer and 2 more will be hired when research scientists from Mission arrive at Tuxtla. Computer facilities, word processer capabilities and graphics equipment are not currently available at Tuxtla. These would greatly aid in the analysis of data and the preparation of papers. The secretarial staff is currently nonexistent.

Met with Dr. Gersebeck and Mr. Kipper for discussion on Tuxtla and plant conditions and toured the plant. The problems of larval mortality and high housefly populations in the plant have not been resolved.

Met with Mr. Hopkins and Mexican technicians in Tapachula, discussed current research and visited research sites.

Toured Centro de Investigaciones Ecologicas del Sureste library at San Cristobal with Drs. Mackley and Peterson.

Dennis L. Ring

D. R. RING
Research Entomologist

cc: Area Office
Norvan Meyer
Floyd E. Smith
R. E. Reichard
J. P. Spencer
H. C. Hofmann
R. E. Lowe
W. H. Sudlow
H. E. Brown
L. E. LaChance
J. W. Snow
C. J. Whitten
R. C. Bushland
R. A. Bram

RECEIVED JUL 12 1982

June 29, 1982

SUBJECT: SWASS Committee Report

TO: Nazario Pineda V.
Director, Mexico-American Commission
for the Erradication of Screwworm

Robert E. Reichard
Acting Co-Director, Mexico-American Commission
for the Erradication of Screwworm

Attached is a final report from my visit and the SWASS committee's meeting held in Mission on May 27 and 28. The report contains no infomation that was not in the preliminary report. Also, I visited Washington and gave an oral report to Dr. Myer. I believe all items in the report have been accomplished or at least considered. Copies of the draft report were mailed to a number of people but this report has not been distributed. This is left to your descretion. I sincerely hope my trip provided some information that will be useful to the program.

If I can be of any further assistance, let me know.

J. WENDELL SNOW
Laboratory Director

Hugh,
Bob
Here is a copy of the final report in case
you do not have one —
Jack

SWASS Committee Report

On May 14, a committee to evaluate SWASS was appointed by Drs. Pineda and Reichard. The committee was composed of Drs. Anderson, Vargas, Cajero, Graham, Hoffmann, Espinosa and Snow. On May 27 and 28 the committee met in Mission, Texas to discuss all aspects of SWASS. The discussion included performance in the humid tropics, formulation, quality control, as well as criteria for its utilization. This report is written as a final document for the Directors. Action has already been taken or is in progress on most recommendations. The committee concluded that SWASS has been an effective tool in the United States and northern Mexico. This conclusion can be supported by numerous scientific data. It has been particularly effective in outbreaks north of the critical line when both sterile flies and SWASS have been used together.

Data were presented that showed SWASS program execution was near 100% above the critical area but only about 65% in and below the critical line. Therefore, many of the problems with performance of SWASS can be tied directly to execution. SWASS is more prone to poor execution than sterile flies for a number of reasons and its effectiveness is also more dependent on good execution than sterile flies. Despite this, sufficient data exists to prove beyond reasonable doubt that SWASS is not working as well as it should at and below the 20th parallel (this is a general and not absolute fact).

Pellets being manufactured in May were compared with the SWASS cylinders used in Curcurao (tests conducted in Mission) and were found to be more effective in killing flies. However, the pellets were very crumbly and would not transport or disperse without problems. It was concluded that pork blood or machine adjustment was the cause and should be corrected.

In discussions of when to use SWASS the committee continues to recommend its use in high screwworm population areas (cases and/or wild fly capture) for 3 weeks. After 3 weeks the effectiveness should be evaluated and a decision made on the need for additional applications. Applications should be made twice weekly with one pound applied per application on a 1-mile swath width (2nd application flown between grids). The outside lane should generally be 10 miles from the nearest case or wild fly. The preferred grid is considered a 20 x 20 sq. mile area because lanes can be identified better. These are considered technical recommendations because the committee realizes the program Directors must vary from these recommendations because of weather problems, fly production problems and political considerations.

In regards to SWASS production, the committee recognized the need for a minimum regular production level with the capacity to increase production within a short time. This situation already exists and should be continued.

The specific effects of rainfall on the original SWASS formulation is known but has not been determined for the pellets containing wax. While it is less effected by rain the need for the data still exists. This can be obtained easily by the quality control laboratory in Mission. The recommendation is made that pellets be exposed to various moisture situations and the speed of breakdown determined.

Data on a new improved swormlure-4 (Zp-31) were discussed in detail. The new formulation consists of increased levels of the volatile components of swormlure-2. In all cases, the new formulation has been more effective and the committee

recommends its incorporation as the standard attractant for survey and SWASS. Additional research needs were identified as follows:

(1) An improved survey trap that is less costly and simplier to operate than the current WOT.

(2) Continue the improvement of swormlure or develop a wound or other type of attractant.

(3) Expanded effectiveness of SWASS from the current 3-4 days to one week. This would double the effectiveness and reduce application costs significantly. Also, research should be reopened on the development of bait stations.

(4) Research personnel should be assigned to solve the problem of attractants in southern Mexico. This is extremely important to the success of the program and later maintenance of the barrier. The research must be conducted in southern Mexico since evidence is available that swormlure is attractive to a southern strain of flies when released in the north.

Improvements in the quality control system is also recommended. A tractor trailer should always be available at Mission for direct loading of pellets. The less SWASS is handled the better. Biological tests (using buckets or traps) should be developed and used at each distribution center on all shipments of SWASS. The tests should be conducted 2 days before its use. This test will not replace the need for a chemical analysis at the Mission laboratory. A system for the transport of samples to Mission has been developed and awaits Mr. Leftler's construction of units to hold dry ice and pellets. This shall be completed as soon as possible. Samples received in Mission now are not always valid because deterioration in quality could have occurred in transport.

Specific Recommendations

1. Crumbly pellets are now being produced at Mission. The cause is either hog blood or the new pelleting machine or both. A test procedure should be developed to determine pellet hardness and composition.

2. Research should begin a crash program to develop swormlure and SWASS that will perform better in southern Mexico. Both are needed for program success and researchers should understand the urgency of this need. In addition, efforts shall be made to reduce the cost and simplify the WOT trap.

3. Tests should be initiated by the chemistry laboratory in Mission to determine the effects of rainfall on pellets.

4. The use of swormlure-4 should be initiated by the commission as an attractant and in SWASS production.

5. The SWASS sample for chemical analyses boxes should be completed and the system made operational as soon as possible.

6. Pellets should not be released near towns or water. All pilots should be made aware of the potential danger from dropping in these places.

7. Sufficient trailer trucks should be assigned to the SWASS program so that manufactured pellets are loaded directly into trailers.

8. A bioassay test using buckets or traps should be developed for SWASS at each distribution center. Tests should be completed before SWASS is utilized.

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service

7/15/82

To Bob Hoffman,

APHIS is signing a contract today with Eden & Lincoln for a new study of the s.w. program. The study will start in Mexico C. on 7/25 and will be complete by Sept. 1

The team will include Cotton Meadows, Leo La Chance, Bob Berger, Dial Martin, Norman Leppla and an entomologist from Texas A&M Exten. Service - They will be in Tuxtla about 7/27 and I will have a chance to talk to them there -

Hugh

ARS FORM 246 (3/65)

U.S. DEPARTMENT OF AGRICULTURE

REFERENCE SLIP

DATE 7/2/82

TO Dr. O. H. Graham

RECEIVED JUL 15 1982

- [ ] ACTION
- [ ] APPROVAL
- [ ] AS REQUESTED
- [ ] FOR COMMENT
- [x] FOR INFORMATION
- [ ] INITIALS
- [ ] NOTE AND FILE
- [ ] NOTE AND RETURN
- [ ] PER PHONE CALL
- [ ] RECOMMENDATION
- [ ] REPLY FOR SIGNATURE OF
- [ ] RETURNED
- [ ] SEE ME
- [ ] YOUR SIGNATURE

REMARKS Hugh,

Attached is the APHIS proposal which was provided to Lincoln-Eden on Friday.

They plan to be in Washington on Wed to develop a final proposal.

FROM Ralph

☆ U.S. G.P.O. 1980-316-575 FORM AD-514 (8-64)

RECEIVED JUL 1 5 1982

PROPOSAL FOR CONSULTANT GROUP REVIEW

CHARGE

Conduct an in-depth review of the current screwworm eradication program, develop recommendations, and submit a written report to the Administrator of APHIS. Both the efficiency and the effectiveness of the present approach should be evaluated and practical improvements or alternatives described. Specifically, the consultant group must determine the probability that the program will achieve its goal of eradicating the fly to the Isthmus of Tehuantepec and establishing a barrier by 1984.

SCOPE

Consultant group is expected to examine the screwworm eradication program in its entirety. Review need not be limited to the activities in Mexico. It is suggested that support from VS in Mission, Texas, APHIS at headquarters, and ARS in its various locations be evaluated. All levels of direction should be examined. It is recommended that future plans be appraised in addition to current procedures. Organizational structure, resource utilization, planning, and direction should all be examined as well as the application of state-of-the-art techniques. Consultant group may want to determine how well past recommendations have been incorporated into the program.

METHODS AND SUPPORT

Consultant group shall design and conduct the study using acceptable scientific techniques and in a manner and at a pace they think most productive. APHIS will provide access to all of its pertinent written reports and will instruct its personnel to supply all anecdotal data requested. If consultants feel it necessary, APHIS can provide a list of groups representing major segments of the involved industry and research communities. In addition to the fact-finding part of the study in which the problems are identified, the consultant group shall apply itself to identifying practical solutions to these problems. APHIS will concede the time necessary for this part of the review.

SPECIAL CONSIDERATIONS

A major portion of the program activity is in the Republic of Mexico and is in cooperation with the Mexican Government. Therefore, the consultant group should either contain individuals proficient in Spanish or acquire adequate interpreting services. Fact-finding will probably require travel to elevations as high as 8,000 feet and to hot, humid, and underdeveloped areas.

RECEIVED JUL 1 5 1982

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United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

July 16, 1982

SUBJECT: Swormlure Performance in Hot, Dry Weather

TO: Dr. Nazario Pineda V.
Dr. Robert E. Reichard
Comision Mexico - Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12° Piso
Apartado Postal M-2890
Mexico, D. F. 06000

Drs. Dennis Ring and Harold Brown have recently completed a comparison of swormlure-2 and swormlure-4 in Starr Co., Texas, using wind-oriented traps and either a cotton or plastic wick. The traps remained in place for 21 days and swormlure was not added to the sample bottles during the exposure period. Week to week variation in the number of flies trapped was obviously influenced by a number of factors, but the number and quality of the sterile flies being released was probably the most important factor. The increased numbers which entered the traps during the last 3 days, in spite of many of the swormlure bottles being empty, almost certainly is the result of an improvement in the quality of the flies that were released just prior to July 10.

The totals shown in Table 1 suggest that; under the conditions of the test, there was no real difference in the effectiveness of swormlure-2 and swormlure-4, but a closer study shows that for the first 18 days SL-4 was 1.36X more effective than SL-2. If only the cotton wicks (as used in the program) are considered, SL-4 was 1.51X more effective the first 18 days and 3.5X more effective the first week.

As the weather data in Table 3 show, the test was conducted during a period when daytime temperatures reached 40°C and RH usually dropped below 30%. No rainfall was recorded and afternoon breezes were characteristically 10-15 mph from the southeast. Under these weather conditions, swormlure-2 was more effective than it has been in southern Mexico, but the combination of swormlure-4 and a cotton wick was clearly the best attractant during the first 7 days of field exposure. We see no reason therefore to change the standard program practice of using cotton wicks and replacing old swormlure with new swormlure each 7 days. Similarly we see no reason to change our recommendation that you use swormlure-4 throughout Mexico as your standard screwworm attractant.

As researchers we are intrigued by the number of flies which entered traps baited with empty swormlure bottles and will continue our studies of "old swormlure". A logical presumption is that the wicks in the empty bottles were saturated with indole, benzoic acid, and perhaps other low volatile components and that these components continue to volatilize off the wicks at 40°C at a significantly higher rate than they volatilize at 30°C. Dr. Brown and Mr. Thompson are presently analyzing the residues in the bottles used for the

exposure test reported in Table 2 and will be able to give us the relative amounts of each component for each of the exposure periods.

O. H. Graham

O. H. GRAHAM
Location/Project Leader

cc: w/encl.
Norvan Meyer
Floyd Smith
W. H. Sudlow
H. C. Hofmann
R. E. Lowe
R. A. Bram
J. W. Snow
C. J. Whitten
J. R. Johnston
R. C. Bushland
J. P. Spencer
J. W. Mackley
H. E. Brown
D. R. Ring
L. T. Lefler

Table 1. Comparison of swormlure-2 with swormlure-4 and cotton wicks with plastic wicks, Starr County, Texas, June - July, 1982.

No. days exposure	No. sterile screwworm flies trapped in 10 WOT's							
	SL-2		SL-4		Totals			
					Wicks		Attractants	
	C	P	C	P	C	P	SL-2	SL-4
1-7	111	157	390	143	501	300	268	533
8-15	359	348	356	468	715	816	707	824
16-18	75	72	79	89	154	161	147	168
19-21	824	587	616	474	1440	1061	1411	1090
Totals	1369	1164	1441	1174	2810	2338	2533	2615

Table 2. Grams of swormlure lost by volatilization from sample bottles exposed outdoors at Moore Field, June 21 - 30. Each bottle contained 50 ml. of swormlure at start of exposure.

No. days exposure	SL-2		SL-4	
	cotton wick	plastic wick	cotton wick	plastic wick
1	6.05	0.53	14.87	1.04
3	14.51	1.64	31.27	2.47
5	26.96	1.84	44.22	4.23
7	35.37	3.51	47.11	5.56
9	39.79	3.35*	46.61	7.57

* 2 reps only.

Table 3. Temperature and relative humidity records for June 22 - July 6, 1982, Rachal, Starr County, Texas.

Date	Temperature		% RH	
	Minimum	Maximum	Minimum	Maximum
June 22	22°C	40°C	24	82
23	22	40	26	82
24	23	41	30	82
25	22	41	28	78
28	22	41	32	78
29	22	40	32	80
30	21	40	28	78
July 1	23	41	26	76
2	23	41	32	78
6	24	41	26	80

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, Texas

July 15, 1982

SUBJECT: Requested Research Personnel Evaluation - D. O. McInnis

TO: J. R. Johnston, AD
USDA, ARS, SR, OTA
P. O. Box EC
College Station, TX 77841

Presumably Dr. D. O. McInnis would not be considered for mandatory personnel evaluation until November 1983 but I recommend that you request an evaluation of his research progress and accomplishments at the earliest possible date. His case write-up and Forms SF-52, AD-332, and SE-514 are enclosed.

Dr. McInnis was awarded the Ph.D. degree in 1978 and began work as a research geneticist in our laboratory in November of that year. He was employed under our cooperative agreement with Texas A&M for two years and entered ARS at the GS-11 level November 16, 1980. His expertise in genetics has strengthened our research program for almost 4 years and he has consistently produced significant research results and published those results. In my opinion he is fully qualified for the GS-12 level.

O H Graham

O. H. GRAHAM
Location/Project Leader

Enclosures
copies in McInnis
personnel folder

U.S. DEPARTMENT OF AGRICULTURE

SPEED MEMO

PART NUMBER 1

RECEIVED JUL 19 1982

DATE July 13, 1982

TO

T. B. Kinney, Jr.

FROM

Ralph A. Bram

SUBJECT

circulate

Review of Screwworm Eradication Program

D. K.

MESSAGE *(WRITE CONCISE MESSAGE. SIGN AND FORWARD PARTS 1 AND 3 TO ADDRESSEE. RETAIN PART 2.)*

Dr. H. C. Mussman, APHIS Administrator, has requested that an independent review be made of the screwworm eradication program. The principal question to be addressed by the review team will be: "Is there a reasonable expectation that the program will reach the Isthumus of Tehuantepec by December 1984?" Of course, other important issues will also be covered. The review will emphasize three areas: (1) screwworm production; (2) field operations; and (3) research and methods development.

Drs. Lincoln and Eden, authors of the 1974 screwworm program review, have been invited to submit a proposal for APHIS consideration. The review and final report will be completed before the end of this calendar year.

cc:

T. J. Army	J. R. Johnston
G. Lambert	K. L. Lebsock
E. L. Kendrick	O. H. Graham
P. J. Fitzgerald	C. J. Whitten

SIGNATURE Ralph A. Bram

REPLY *(USE THIS SPACE FOR REPLY. SIGN AND DATE. RETURN PART 3 TO SENDER. RETAIN PART 1)*

Since this was written the schedule has been accelerated - an 8-man team will start in Mexico City on July 26 and the study will be complete Aug. 31

SIGNATURE

DATE

FORM AD-311 (REV. 11/79)

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

July 16, 1982

SUBJECT: Swormlure Performance in Hot, Dry Weather

TO: Dr. Nazario Pineda V.
Dr. Robert E. Reichard
Comision Mexico - Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12° Piso
Apartado Postal M-2890
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Location/Project Leader

cc: w/encl.
Norvan Meyer
Floyd Smith
W. H. Sudlow
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COOPERATIVE EXTENSION SERVICE

NEW MEXICO STATE UNIVERSITY

BOX 3AE, LAS CRUCES, NEW MEXICO 88003
COLLEGE OF AGRICULTURE AND HOME ECONOMICS

RECEIVED JUL 2 6 1982

July 20, 1982

Dr. O. H. Graham
P. O. Box 986
U.S.D.A. Screw-worms Laboratory
Mission, Texas 78572

Dear Dr. Graham,

The screw-worms sent in by Dr. Huesen in the Santa Fe area, were identified as Cochliomyia macellara (Fabricius). These larvae were found in a wound of a patient of Dr. Huesen. This patient had a cut on his ear and they had migrated into the primary ear canal. Dr. Huesen had sent these larvae to an Oklahoma hospital for I.D.. Unfortunately, he does not have any additional larvae for I.D..

Sincerely,

Lloyd M. English

Lloyd M. English
Extension Entomologist

LME/ai

cc: Kinzer

New Mexico State University is an equal opportunity employer. All programs are available to everyone regardless of race, color, religion, sex, age, handicap, or national origin. New Mexico State University and the U.S. Department of Agriculture cooperating.

COOPERATIVE EXTENSION SERVICE

NEW MEXICO STATE UNIVERSITY

BOX 30, LAS CRUCES, NEW MEXICO 88003
COLLEGE OF AGRICULTURE AND HOME ECONOMICS

RECEIVED JUL 2 6 1982

July 20, 1982

Dr. O. E. Graham
P. O. Box 956
U.S.D.A. Screw-worm Laboratory
Tuskon, Texas 78572

Dear Dr. Graham,

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Sincerely,

Lloyd O. English
Extension Entomologist

LOE/kt

cc: Bueso

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United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Agricultural Products Quality Research
P. O. Box 267
Weslaco, Texas 78596

RECEIVED AUG 1 1 1982

August 2, 1982

SUBJECT: Documents for approval of CWU 201-7304-20480 on "Screwworm attractants, SWASS and diets"

TO: J. R. Johnston
Area Director, OTA

THROUGH: C. M. Heald
Laboratory Director, SRL

Please find enclosed completed copies of the following documents concerning the proposed subject CWU.

1. Complete Justification Statement
2. AD Form 415 - Research Project Peer Review from O. H. Graham, W. H. Sudlow and NRP Leader, Ralph Bram
3. Form AD 416, Research Work Unit/Project Description-Research Resume
4. Form AD 417, Research Work Unit/Project Description-Classification of Research
5. Form AD 592 - Request for Action on CRIS Work Unit

Should you have any questions, please give me a call.

Harold E. Brown

HAROLD E. BROWN
Research Leader

Enclosures

Oklahoma-Texas
Area

Quality Research
P. O. Box 267
Weslaco, Texas 78596

August 3, 1982

SUBJECT: Documents for CRIS 201-7304-20480
on "Screwworm Attractants, SWASS
and Diets"

TO: Ralph Bram
National Research Program Leader
Insects Affecting Man and Animal

As we discussed, I am forwarding a copy of each of the documents for establishing the WRU and CRIS at this laboratory for your information. The documents are being forwarded through regular channels.

Should you have any questions, please give me a call.

Harold E. Brown

HAROLD E. BROWN
Research Leader

Enclosures

REQUEST FOR ACTION ON
CRIS WORK UNIT

Room 107, Building 005, BARC-West
Beltsville, Maryland 20705

THROUGH: Program Planning and Review Staff

Action on CRIS Work Unit requested

☒ NEW ☐ EXTENSION ☐ REVISED ☐ AMENDMENT ☐ TERMINATED

ACCESSION NUMBER	CRIS WORK UNIT NO.	TITLE
	7304-20480	Improvement of screwworm attractants, SWASS, and diets

REASON FOR ACTION

New research at Weslaco necessitated by the transfer of screwworm research program to Tuxtla Gutierrez, Chiapas, Mexico Form 457 previously approved.

Recommended By (Signature)	Title	Date
Harold E. Brown	Research Leader	8/2/82
Recommended By (Signature)	Title	Date
RECOMMENDED BY (Signature)	TITLE	DATE
APPROVED BY (Signature)	TITLE	DATE

Form SEA-592 (11/79) USDA-SEA

AGRICULTURAL RESEARCH

RESEARCH PROJECT PEER REVIEW

A— Project Data and Peer Review Type — To be completed by Research Leader prior to solicitation of peer review.

PROJECT DATA

PROJECT TITLE:	PROJECT NO.	DATE
Improvement of screwworm attractants, SWASS, and diets	7304-20480	July 16, 1982

REVIEW TYPE

AR or Non-AR Scientist [X] AR Technical Advisor [ ] National Program Staff Coordinator [ ] Biometrician [ ]

B— Scientific Merit Review Criteria

To be completed by all peer reviewers. Both qualitative ratings and narrative comments desired in spaces indicated; responses may be omitted on criteria peer reviewer does not feel qualified to address. Use additional sheets as necessary to provide responses.

1. Overall scientific value of proposed research project: Will the proposed project make a significant contribution to new knowledge, provide a better understanding of existing knowledge, develop appropriate new methodologies, or make valid contribution(s) to new technologies?

(Check one)				
Low	below	Average	above	High
				✓

NARRATIVE *(Please provide comments and explanation of rating)*:

New technologies needed by the client agency (APHIS) to facilitate screwworm eradication will be developed.

2. Adequacy of the research proposal design: Is the proposal adequate and scientifically feasible with respect to the hypothesis, approach, and plan of work? Is the experimental design statistically sound?

(Check one)				
Low	below	Average	above	High
				✓

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The proposed research has been well designed.

3. Adequacy of literature review and knowledge: Does the project statement provide an adequate review of the literature and demonstrate an appropriate awareness of the current state of the art?

(Check one)				
Low	below	Average	above	High
				✓

NARRATIVE *(Please provide comments and explanation of rating)*:

The literature review is more than adequate for the purpose.

4. Adequacy of methods, equipment and personnel proposed: Are the proposed methodologies, equipment and personnel appropriate and sufficient to accomplish the objective?

(Check one)				
Low	below	Average	above	High
			✓	

NARRATIVE *(Please provide comments and explanation of rating)*:

In general, the proposed methods, equipment, and personnel are adequate to initiate the research project. On the basis of findings the first 1-2 years, some modification of the methods and new equipment may be needed.

posal and what is the probability of success? Can the objectives be restated so as to be achieved in the stated timeframe?

Low	below	Average	above	High
			✓	

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The probability of success within the proposed timeframe is excellent. There is no need to restate the objectives.

6. Scientific importance of the proposal and its relationship to ongoing research: What is the degree of scientific relevance and urgency of the proposed research and will the results contribute materially to the success of other ongoing projects?

(Check one)				
Low	below	Average	above	High
				✓

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

Success of the research will greatly facilitate conduct of the APHIS program and may produce substantial savings for APHIS. In addition, the information will be valuable to other researchers working in related fields.

7. Extent of duplication of any (State, Federal or private) ongoing effort: Does the project as proposed duplicate any (State, Federal or private) ongoing research or is it repetitive of previous research? If so, is this duplication/repetition desirable?

No duplication will result as all screwworm research is conducted by ARS.

8. Relative proportion of basic, applied and developmental research: In the opinion of the peer reviewer, what percentage of the proposed research is basic in nature, what percentage is applied in nature, and what percentage is developmental in nature?

About 75% basic and 25% applied.

C— *Program Merit Review Criteria*

To be completed by NPS reviewer and by other peer reviewers who feel qualified to address the criteria and questions.

1. Fit of proposed project to research priorities?

3. Feasibility of completing the proposed research and achieving the objectives within the timeframe of the "need"?

4. Judgment of the cost, benefit of the proposed research? Adequacy of the funds and personnel requirements and facilities proposed?

5. Adequacy of the beneficiaries identified for the proposed project? *(Are the clientele and beneficiaries of this research properly identified? Are they appropriate to SEA/AR missions and goals?)*

D— Peer Reviewer Information (Will be provided to project leader unless specified to the contrary by peer reviewer.)

NAME OWEN HUGH GRAHAM	ADDRESS USDA, ARS, Southern Region Oklahoma-Texas Area Screwworm Research P. O. Box 986 Mission, Texas 78572
TITLE Location/Project Leader	
SIGNATURE O H Graham	
DATE July 20, 1982	TELEPHONE NO. 512/585-2783

AGRICULTURAL RESEARCH

RESEARCH PROJECT PEER REVIEW

A— Project Data and Peer Review Type — To be completed by Research Leader prior to solicitation of peer review.

PROJECT DATA

PROJECT TITLE:	PROJECT NO.	DATE
Improvement of screwworm attractants, SWASS, and diets	7304-20480	July 16, 1982

REVIEW TYPE

AR or Non-AR Scientist [X] AR Technical Advisor [ ] National Program Staff Coordinator [ ] Biometrician [ ]

B— Scientific Merit Review Criteria

To be completed by all peer reviewers. Both qualitative ratings and narrative comments desired in spaces indicated; responses may be omitted on criteria peer reviewer does not feel qualified to address. Use additional sheets as necessary to provide responses.

1. Overall scientific value of proposed research project: Will the proposed project make a significant contribution to new knowledge, provide a better understanding of existing knowledge, develop appropriate new methodologies, or make valid contribution(s) to new technologies?

(Check one)				
Low	below	Average	above	High
			X	

NARRATIVE *(Please provide comments and explanation of rating)*:

The present attractant is not as effective in the tropics as it is in the temperate zones. The effectiveness of SWASS and wind oriented traps will largely depend on the development of an attractant which functions in the sub-tropical and tropical areas of Southern Mexico and Central America.

2. Adequacy of the research proposal design: Is the proposal adequate and scientifically feasible with respect to the hypothesis, approach, and plan of work? Is the experimental design statistically sound?

(Check one)				
Low	below	Average	above	High
			X	

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

3. Adequacy of literature review and knowledge: Does the project statement provide an adequate review of the literature and demonstrate an appropriate awareness of the current state of the art?

(Check one)				
Low	below	Average	above	High
			X	

NARRATIVE *(Please provide comments and explanation of rating)*:

The Project Team's long experience and involvement in many areas of the Screwworm Program's mass rearing facility and the development of attractants lends to their knowledge as to the current state of the art.

4. Adequacy of methods, equipment and personnel proposed: Are the proposed methodologies, equipment and personnel appropriate and sufficient to accomplish the objective?

(Check one)				
Low	below	Average	above	High
			X	

NARRATIVE *(Please provide comments and explanation of rating)*:

The equipment and personnel are more than adequate.

5. Appropriateness of proposed timeframe: Can the objective(s) be reached within the timeframe of the proposal and what is the probability of success? Can the objectives be restated so as to be achieved in the stated timeframe?

(Check one)				
Low	below	Average	above	High
			X	

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The time frame is adequate if scientist and technician are able to devote allocated time to project.

6. Scientific importance of the proposal and its relationship to ongoing research: What is the degree of scientific relevance and urgency of the proposed research and will the results contribute materially to the success of other ongoing projects?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

Reduction of adult populations of screwworm flies with SWASS greatly reduces the numbers of sterile insects needed for eradication. Improvements in larval diets improves larval size and probably improves adult sterile male competitiveness.

7. Extent of duplication of any (State, Federal or private) ongoing effort: Does the project as proposed duplicate any (State, Federal or private) ongoing research or is it repetitive of previous research? If so, is this duplication/repetition desirable?

No.

8. Relative proportion of basic, applied and developmental research: In the opinion of the peer reviewer, what percentage of the proposed research is basic in nature, what percentage is applied in nature, and what percentage is developmental in nature?

Basic - 70%.
Applied - 30%.

C— Program Merit Review Criteria

To be completed by NPS reviewer and by other peer reviewers who feel qualified to address the criteria and questions.

1. Fit of proposed project to research priorities?

2. Need for research within context of National Research Programs, Technological Objectives, and USDA-SEA-AR missions and goals?

3. Feasibility of completing the proposed research and achieving the objectives within the timeframe of the "need"?

4. Judgment of the cost/benefit of the proposed research? Adequacy of the funds and personnel requirements and facilities proposed?

5. Adequacy of the beneficiaries identified for the proposed project? *(Are the clientele and beneficiaries of this research properly identified? Are they appropriate to SEA/AR missions and goals?)*

D— Peer Reviewer Information (Will be provided to project leader unless specified to the contrary by peer reviewer.)

NAME
WILLIAM H. SUDLOW

TITLE
LABORATORY DIRECTOR

SIGNATURE
William H. Sudlow

DATE
July 21, 1982

ADDRESS
USDA, APHIS, VS, IP
SCREWWORM LABORATORY
P. O. BOX 969
Mission, TX 78572

TELEPHONE NO.
512-585-1645

5. Appropriateness of proposed timeframe: Can the objective(s) be reached within the timeframe of the proposal and what is the probability of success? Can the objectives be restated so as to be achieved in the stated timeframe?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The enhancement of swormlure and SWASS must be achieved within the timeframe proposed in order to have a reasonable impact on the screwworm eradication program. Prospects for this are great. The Project Leader has recently developed swormlure-4 which is at least 1.4X more attractive than the previous formulation, swormlure-2.

6. Scientific importance of the proposal and its relationship to ongoing research: What is the degree of scientific relevance and urgency of the proposed research and will the results contribute materially to the success of other ongoing projects?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The importance of this research is extremely high and is closely tied in with the major ARS research effort in support of the APHIS screwworm eradication program.

7. Extent of duplication of any (State, Federal or private) ongoing effort: Does the project as proposed duplicate any (State, Federal or private) ongoing research or is it repetitive of previous research? If so, is this duplication/repetition desirable?

There is no duplication proposed with either state, Federal, or private research efforts. ARS is solely responsible for research in support of the screwworm eradication program and the proposed work complements other ARS research activities.

8. Relative proportions of basic, applied and developmental research: In the opinion of the peer reviewer, what percentage of the proposed research is basic in nature, what percentage is applied, in nature, and what percentage is developmental in nature?

Basic - 50%

Applied - 25%

Developmental - 25%

Program Merit Review Criteria

C– To be completed by NPS reviewer and by other peer reviewers who feel qualified to address the criteria and questions.

1. Fit of proposed project to research priorities?

Research in support of the action and regulatory agencies of the Department is of high priority to ARS. In view of the fact that screwworm eradication is the second largest APHIS-VS program, the importance of research support is obvious. Swormlure and SWASS enhancement is of second priority within the research efforts of ARS in support of screwworm eradication. Enhancement of screwworm diet is fifth priority.

AGRICULTURAL RESEARCH

RESEARCH PROJECT PEER REVIEW

A– Project Data and Peer Review Type – To be completed by Research Leader prior to solicitation of peer review.

PROJECT DATA

PROJECT TITLE:	PROJECT NO.	DATE
Improvement of screwworm attractants, SWASS, and diets	7304-20480	July 16, 1982

REVIEW TYPE

AR or Non-AR Scientist	AR Technical Advisor	National Program Staff Coordinator	Biometrician
☐	☐	☒	☐

B– Scientific Merit Review Criteria

To be completed by all peer reviewers. Both qualitative ratings and narrative comments desired in spaces indicated; responses may be omitted on criteria peer reviewer does not feel qualified to address. Use additional sheets as necessary to provide responses.

1. Overall scientific value of proposed research project: Will the proposed project make a significant contribution to new knowledge, provide a better understanding of existing knowledge, develop appropriate new methodologies, or make valid contribution(s) to new technologies?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide comments and explanation of rating)*:

The importance of swormlure and SWASS to successful screwworm eradication cannot be over-emphasized. This technology played a significant role in screwworm eradication from Texas and the northern parts of Mexico by providing a means of immediately reducing screwworm population densities to a level where the sterile male release could be most effective. The proposed research is of high scientific value and is essential to the further success of the screwworm eradication program in the humid tropics of Mexico. The requirements for enhanced screwworm diet are equally important in order to rear competitive flies in the most cost effective manner.

2. Adequacy of the research proposal design: Is the proposal adequate and scientifically feasible with respect to the hypothesis, approach, and plan of work? Is the experimental design statistically sound?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide explanation of rating and suggestions for improvements)*:

The proposed research is scientifically feasible as shown by previous success of the Project Leader in those areas of swormlure, SWASS, and diet enhancement in respect to the hypothesis, approach, and plan of work.

3. Adequacy of literature review and knowledge: Does the project statement provide an adequate review of the literature and demonstrate an appropriate awareness of the current state of the art?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide comments and explanation of rating)*:

The Project Leader is not only aware of all literature associated with these avenues of research, but he has also been a central figure in the development of these technologies to their present state.

4. Adequacy of methods, equipment and personnel proposed: Are the proposed methodologies, equipment and personnel appropriate and sufficient to accomplish the objective?

(Check one)				
Low	below	Average	above	High
				X

NARRATIVE *(Please provide comments and explanation of rating)*:

The methodologies proposed are exceptionally adequate. The equipment and personnel which have been identified are adequate in view of the cooperative nature of the work. The Project Leader will work very closely with ARS scientists at Tuxtla Gutierrez, Mexico, and Fargo, North Dakota, as well as APHIS program and methods development personnel in Mexico.

2. Need for research within context of National Research Programs, Technological Objectives, and USDA-SEA-AR missions and goals?

The results of the research proposed are needed "as soon as possible" by the screwworm eradication program and the research is an integral part of NRP 20480 and the ARS mission and goals.

3. Feasibility of completing the proposed research and achieving the objectives within the timeframe of the "need"?

The proposed research is of such high priority to APHIS that results will be incorporated into the eradication program as soon as they have been scientifically substantiated. Thus, the timeframe of the need is now, and the results of the proposed research will be assimilated into the program as soon as they are obtained.

4. Judgment of the cost/benefit of the proposed research? Adequacy of the funds and personnel requirements and facilities proposed?

The cost benefit of the screwworm eradication program is greater than 1:100. Certainly, effective swormlure and SWASS in the humid tropics of Mexico and improved larval diet would yield a return of at least 100 X of original investment and could accelerate progress of eradication by a year or more.

5. Adequacy of the beneficiaries identified for the proposed project? *(Are the clientele and beneficiaries of this research properly identified? Are they appropriate to SEA/AR missions and goals?)*

The sole beneficiary of this research is the APHIS-VS screwworm eradication program and, as a result, the livestock producers of the United States and the consumers of animal products. These beneficiaries are undoubtedly appropriate to the ARS missions and goals.

D— Peer Reviewer Information (Will be provided to project leader unless specified to the contrary by peer reviewer.)

NAME
Ralph A. Bram

TITLE
National Research Program Leader
Insects Affecting Man & Animals

SIGNATURE
Ralph A. Bram

DATE
July 26, 1982

ADDRESS
Bldg. 005
Agricultural Research Center-West
Beltsville, Maryland 20705

TELEPHONE NO.
301-344-2771

ARS-RESEARCH PROJECT STATEMENT

A. TITLE: Enhancement of Screwworm, SWASS and diets

B. PROJECT NUMBER: 7304-20480

C. PROJECT LEADER: Harold E. Brown
Research Leader
Agricultural Products Quality Research
USDA,ARS,OTA
BOX 267
Weslaco, Texas 78596
512-968-7546

D. OBJECTIVES: To develop the screwworm attractant, Swormlure-2, and SWASS pellets for use in tropical conditions and to provide research support for the development of screwworm larval and adults diets and in the screwworm eradication programs.

E. DURATION: 60 months
START: As soon as possible
STOP: After 60 months

F. APPROVALS:

Research Leader Harold E. Brown (Recommend) 7/17/82 (Date)

Laboratory Director C M Awed (Recommend) 7/17/82 (Date)

Area Director _____ (Recommend) _____ (Date)

Regional Administrator _____ (Approve) _____ (Date)

Chief (NPS Subject-Matter Staff) _____ (Concur) _____ (Date)

G. NEED FOR RESEARCH:

Swormlure-2 the attractant for adult screwworms has been very effective in Southwestern U.S. and northern Mexico, however, this effectiveness has been diminished in the humid, tropical areas of middle and southern Mexico. In order for the Screwworm Eradication Program to continue the success as has been evident in Southwestern U.S. and northern Mexico, research will be required to enhance the attractivensss of Swormlure-2, and to explore possibilities of developing new attractants. The development of Swormlure-2 was the principal accomplishment that led to the development of SWASS that has been used successfully in reducing screwworm populations in infested areas. The continued success of this tool in screwworm eradication programs depends on the development of a better attractant and the incorporation of this material into SWASS thus increasing the effectiveness of this material. Furthermore, trap survey systems have been dependent on the use of Swormlure-2. As the program moves south through Mexico, the effectiveness of this system is decreased due to the decrease in the attractiveness of Swormlure-2.

The Screwworm Eradication Program uses liquid nutrient medium for the mass production of all screwworm larval. It has been proposed that an adult diet devoid of meat and meat products be used. These developments have established a need for chemical research or (1) assess the quality of products used in liquid or synthetic diets, (2) developing new and more effective rearing techniques and procedures and (3) assessing the quality of the flies produced. This effort proposes to provide information concerning the first two aspects of these needs.

With the proposed transfer of Screwworm Research from Mission, TX to Tuxtla Gutierrez, Chiapas , Mexico, necessitated a need to continue this research at Weslaco. The continued manufacture of Swormlure-2 and SWASS by the eradication program at Mission, and the nearness of the expertise, instrumentation and availability dictated the logical placement of the research at Weslaco.

H. APPROACH AND RESEARCH PROCEDURE:

The attractiveness of swormlure to screwworm flies will be enhanced by evaluating the dispersal of the candidate atttactants, and/or components under various experimental and environmental conditions in arid and tropical locations. These results will be utilized to formula candidate attractants. The rate of dispersal and relative attractiveness will be determined, using trap catch as the criteria, and the rate of dispersal of each component will be determined using gas-liquid chromatographic techniques. Extracts will be made from larval rearing vat spent nutirient medium, larval infested wound fluids, calf navel and umbilical chords and attractive shrub flowers and the attractiveness of these extracts will be evaluated. Active fractions will be subjected to analytical procedures to determine the identity of active components. These fractions will be added to existing swormlure formulations to determine the value of the materials when incorporated in the system.

Screwworm larval and adult diets and the components thereof, will be evaluated using in-plant rearing and production techniques to determine these acceptability for producing larval, and adult maturation and oviposition stimulants. Consideration will be given to availability and costs when developing dietary components and procedures.

I. LITERATURE REVIEW:

The work of Grable (unpublished data) and DeVaney et al. with bacterialinoculated blood led to the formulation and testing of the first successful chemical attractant for screwworms, (Jones et al, 1976). Further developments by Coppedge and others (1977 and 1978) provided for the estalbishment of swormlure-2 as the chemical attractant for use in the screwworm program. Broce, Goodenough, Coppedge, Snow and others provided research on the use of swormlure-2 in wind oriented traps for use in field surveys, strain evaluations and other research involving fly trapping data. Further developments led to the incorporation of swormlure-2 into a bait-attractant kill system, originally field tested, successfully, on the Island of Curacao, whereby nature populations of screwworm flies could be reduced to a level that the sterile male technique could be more effective. This was further developed into a pelletized formulation and has been successfully used in the screwworm eradication program in the Southwestern U.S., and northern Mexico. However, as the program moved south through Mexico it became apparent that swormlure-2, developed in the hot arid areas of the Southwestern U.S. and northern Mexico, was not as effective in the more humid, tropical regions.

The original developments of Melvin and Brechland (1938) led to the successful rearing of the screwworm, an obligate parasite of warm-blooded animals, on artificial medium. Further developments by Gingrich, Graham and others have provided synthetic media for mass-production of screwworm larvae. Further developments by Brown and Snow (1978, 1979) have provided a cost effective liquid medium for the mass-rearing of hundreds of millions of screwworm larvae weekly. However, as availability and costs of these materials vary, it is necessary to maintain ongoing research to assure alternatives to the present system. Furthermore, as costs and availability of meat products to be used in adult diets become critical, it is necessary to develop new and effective, meat-free alternative diets.

Literature Cited

1. Broce, A. A., J. L. Goodenough, and J. R. Coppedge. 1977. A wind oriented trap for screwworm flies. J. Econ. Entomol. 70(4): 413-416.

2. Brown, H. E. and J. R. Coppedge. 1979. Chemical stability of Swormlure-2, the attractant for the screwworm. For J. Agr. Food Chem.

3. Brown, H. E. and Snow, J. W. 1978. Protein utilization by screwworm larvae (Dystera: Calliphoridae) reared on liquid medium. J. Med. Entomol. 14:531-533.

4. Brown, H. E. and Snow, J. W. 1979. Screwworms (Dystera: Calliphoridae): A new liquid medium for rearing screwworm larvae. J. Med. Entomol. 16:29-32.

5. Brown, Harold E. and Mackley, J. W. 1982. Effects of field exposure on the biological activity and chemical composition of the screwworm chemical attractant, Swormlure-2. Submitted for publication.

6. Brown, H. E. and Coppedge, J. R. 1979. Chemical stability of the screwworm attractant, swormlure-2. Submitted for publication.

7. Brown, H. E. and Snow, J. W. 1982. Use of dried, non-fat milk in liquid nutrient medium for rearing screwworm larvae. Submitted for publication.

8. Jones, C. M., Oehler, D. D., Snow, J. W. and Grabbe, R. R. A Chemical attractant for screwworm flies. J. Econ. Entomol. 61: 389-391.

9. Coppedge, J. R., A. B. Broce, F. H. Tannahil, J. L. Goodenough, J. W. Snot, and M. M. Crystal. 1978. Development of a bait system for suppression of adult screwworms. J. Econ. Entomol. 71(3): 483-486.

10. Coppedge, J. R., H. E. Brown, J. L. Goodenough, F. H. Tannahil, J. W. Snow, H. D. Petersen, and C. H. Hofmann. 1979. Field performance of a new formulation of the screwworm adult suppression system (SWASS). For Environ. Entomol.

11. Coppedge, J. R., J. L. Goodenough, A. B. Broce, F. H. Tannahill, J. W. Snow, M. M. Crystal, and H. D. Petersen. 1978. Evaluation of the screwworm adult suppression system (SWASS) on the island of Curacao. Entomol. 71(4): 579-584.

12. DeVaney, J. A., G. W. Eddy, E. M. Ellis, and R. Harrington, Jr. 1973. Attractancy of inoculated and incubated bovine blood fractions to screwworm flies (Diptera: Calliphoridae): role of bacteria. J. Med. Entomol. 10(6): 591-595.

13. Gingrich, R.E. 1964. Nutritional studies on screwworm larvae with chemically defined media. Ann. Entomol. Soc. Am. 57: 351-60.

14. 1972. Nutritional studies: Their bearing on the development of practical oligidic diets for mass-rearing larvae of the screwworm Cochliomyia hominivorax. p. 257-79. In: Rodriguez, J. G., ed., Insect and mite nutrition. North Holland Publ. Co., Amsterdam.

15. Gingrich, R. E., A. J. Graham & B. G. Hightower. 1971. Media containing liquified nutrients for mass-rearing larvae of the screwworm. J. Econ. Entomol. 64:678-83.

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17. Graham, A. J. & F. H. Dudley. 1959. Culture method for mass rearing screwworm larvae. J. Econ. Entomol. 52: 1006-08.

18. Guillot, F. S., H. E. Brown, and A. B. Broce. 1978. Behavior of sexually active male screwworm flies. Ann. Entomol. Soc. Am. 71(2): 199-201.

19. Hightower, B.G., G. E. Spates, Jr & J. J. Garcia. 1972. Growth and critical size at pupation for screwworms developing in flesh wounds. J. Econ. Entomol. 65: 1349-52.

20. Melvin, R. & R. C. Bushland. 1936. A method for rearing Cochliomyia americana C&P on artificial media. USDA Entomol. and Plant Quar. EF-88.

21. Snow, J. W., Coppedge, J. R. Broce, A. B., Brown, H. E., Goodenough, J. L. and Tannahill, F. H. 1982. The utilization of Swormlure as an adult screwworm detection system and a complimentary or independent control system to be used in screwworm eradication program. In Press.

K. RESOURCES

Funds Required

Fund Source	Amount	Remarks
WRU-7309-20480 will be transferred to Tuxtla Gutierrez Chiapas, Mexico	$33,600	Funding will be for 0.2 SY. Support services of 1 support person (1 MY) will be provided by Screwworm Research

Personnel Required

1. Scientists	Time	Remarks
Harold E. Brown Supervisory, Research Chemist, GS-13/10 1320	0.2 SY	None

2. Support

Paul E. Thompson
Physical Science
Technician
GS-7/2-1311

Special Requirements Screwworm Research will be requested to assist in acquiring special instrumental and equipment when needed. Should long terms of work travel be involved, Screwworm Research will be asked to help fund this travel.

RESEARCH WORK UNIT/PROJECT DESCRIPTION - RESEARCH RESUME
U. S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATIONS AND OTHER INSTITUTIONS

1. ACCESSION NO.	AGENCY IDENTIFICATION NO. 2.	3.	4.	5. WORK UNIT/PROJECT NO.	6. STATUS New	Extended	Revised	Terminated	Pending
	ARS	7304		7304-20480	A [X]	B [ ]	C [ ]	E [ ]	F [ ]

7. TITLE
Improvement of screwworm attractants, SWASS, and diets

8. PERFORMING ORGANIZATION	CITY	STATE/COUNTRY	ZIP CODE	CONG. DISTRICT
USDA Subtropical Research Laboratory P. O. Box 267	Weslaco	TX	78596	15

13. RESPONSIBLE ORGANIZATION	CITY	14. STATE	ZIP CODE
USDA-ARS, Southern Region Oklahoma-Texas Area P. O. Box EC	College Station	TX	77841

12. INVESTIGATOR NAME(S) *(Last name & initials)*
1 Brown, H. E.
2
3
4
5
6

15. RESPONSIBLE INDIVIDUAL *(Last name & initials)*
Johnston, J. R.

16. RESEARCH LOCATION ON CAMPUS
A [ ] Yes B [X] No

PROJECT TYPE

17-1. FOR USDA USE
A [ ] Contract B [ ] Grant C [ ] Coop. Agmt. D [X] In-house

17-2. FOR USDA USE Contr./Gr./Agmt. with
SAES [ ] Other [ ]

CONTRACTS, GRANTS AND COOPERATIVE AGREEMENTS

18-1. FOR STATE USE
1890/T [ ] SP GR [ ] RD-V [ ]
Hatch [ ] M-S [ ] State [ ]

18-3. DISP. OF EQUIP.
None purchased [ ] Reverts to Gov't. [ ] Retained [ ]

18-4. CONTR./GR./AGMT. NO.

18-5. FOR STATE USE
ARS [ ] ERS [ ] FCS [ ] FS [ ] SRS [ ]

19-1. FACE AMOUNT

19-2. TOTAL SYS. .2

20. FY 82

21. FACILITIES
A [X] Federally owned B [ ] Federally leased C [ ] Combined D [ ] State E [ ] Other

22. - 23. REGIONAL PROJECT NO.

24. OBJECTIVES 25. APPROACH *(Use space needed for "24. OBJECTIVES", then indicate "25. APPROACH".)*

Develop the screwworm attractant, Swormlure-2, and SWASS pellets for use in tropical conditions and to provide research for the development of screwworm larval and adult diets.

25 APPROACH Development of the screwworm attractant, Swormlure, for use in tropical climates by relating, chemically, the dispersal of these materials and relative attractiveness to chemical composition. The requirement and relative concentration of each component, will be ascertained by addition and deletion techniques, chemical analysis, and comparison of effectiveness. Various extracts from larval infested wound fluids, rearing vat fluids, new-born calf umbilical chord and navel tissue, and flowering shrubs will be added to the mixture and evaluated individually for attractiveness to screwworms by conventional techniques. Formulations that show promise will be evaluated in several, differing climatically, geographical areas, and will be formulated into the bait-kill system (SWASS) and the compatability and effectiveness will be compared. Larval and adult diets will be evaluated in rearing experiments conducted in the mass-production plant as required by the program.

27. KEYWORDS
CHEMICAL COMPOSITION TISSUE EXTRACTS DISPERSAL WOUND FLUIDS REARING FLUIDS DISPERSAL ATTRACTANTS REARING NUTRITION SCREWWORM DIPTERA TROPICAL CLIMATES

RECOMMENDED SIGNATURE	TITLE	DATE	APPROVED — Check applicable one — CONCURRED SIGNATURE	TITLE	DATE
Harold E. Jones	RL	7/17/82			
	LD				

28. AWARD DATE (Day, Mo., Yr.)	29. START DATE (Day, Mo., Yr.)	30. TERMINATION (Day, Mo., Yr.)	DURATION (Mos.)

FOR USDA USE
[ ] Project referred and cleared by all interested agencies for entry into CRIS.

SIGNATURE | DATE

FORM AD-416 (12/76)

U. S. DEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION - CLASSIFICATION OF RESEARCH

U. S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATION AND OTHER INSTITUTIONS

DATE (Day, Month, Year)

1. ACCESSION NO.	AGENCY IDENTIFICATION NO. 2	3	4	5. WORK UNIT/PROJECT NO.	31. HATCH MARKETING
	ARS	7304		7304-20480	☐ Yes ☐ No ____ %

32. BASIC RESEARCH	33. APPLIED RESEARCH	34. DEVELOPMENT EFFORT	35. FORESTRY
75 %	25 %	%	%

CLASSIFICATION BY ACTIVITY, COMMODITY, SCIENCE, AND RESEARCH PROBLEM AREA

	ACTIVITY		COMMODITY		SCIENCE		RESEARCH PROBLEM AREA	PRODUCT OF (2) X (4) X (6)
	CODE (1)	% (2)	CODE (3)	% (4)	CODE (5)	% (6)	CODE (7)	% (8)
36.	A4500	100	3000	100	1524	25	210	25
37.	4500	100	3000	100	0914	25	210	25
38.	4500	100	3000	100	0410	25	210	25
39.	4500	100	3000	100	1526	25	210	25
40.								
41.								
42.								
43.								
44.								
45.								
46.								
47.								

SPECIAL CLASSIFICATION

Fields 48 - 77 are used to identify special areas of research such as, Pollution, Health and Medical, Tobacco-Health, Weather, Nuclear Radiation, Poverty, Natural Beauty, Sub-Commodities, Pesticide Targets, Water Resources, Energy, Home Economics, Sub-Activities (ARS) and Special Research Programs (ARS). Refer to your agency manual for specific codes and instructions.

	CODE	%	CODE	%	CODE	%	CODE	%	CODE	%
48.	A4536	100	54. PST1	25	60.		66.		72.	
49.	C4536	100	55. PST2	50	61.		67.		73.	
50.			56. PST3	25	62.		68.		74.	
51.			57.		63.		69.		75.	
52.			58.		64.		70.		76.	
53.			59.		65.		71.		77.	

79. COOPERATORS

A ☒ USDA B ☒ Other Federal Agencies C ☐ Industry and other D ☐ State

COOPERATING DEPARTMENTS WITHIN STATE PERFORMING INSTITUTION (List)

80. Mexican-American Commission for Eradication of the Screwworm

81.

82.

83. REPORTING DEPARTMENT WITHIN STATE PERFORMING INSTITUTION

AD FORM 417
DEC 1976

arriaga strain evaluation, San marcos, Guerrero

July 12 - partial release
14 - full release
17 - "
20 - "

Release rate: ± 1600/sq. mi.
as of July 21, zero sterility
egg mass collection: ± 200 per week

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above information provided by Chris Hofmann, July 22, 1982

RECEIVED AUG 1 1 1982

United States Department of Agriculture | Agricultural Research Service | National Program Staff | Beltsville, Maryland 20705

August 3, 1982

SUBJECT: Report of the Technical Panel for the Study of Reproductive Isolation in Screwworm Populations

TO: J. A. Seawright, Research Entomologist
IAMARL, Gainesville, FL

THROUGH: D. E. Weidhaas, LD
IAMARL, Gainesville, FL

Thank you for your memorandum on this subject of June 28. I have delayed in responding until now in order to fully address your recommendation that the Technical Panel report form a basis for the expansion of a program on screwworm genetics.

Since the Technical Panel review, APHIS has reinstated the Lincoln-Eden team with emphasis on reviewing production, field operations, and research and methods development support. The review is currently in progress and a report is anticipated early in September. At that time, the Technical Panel report and the Lincoln-Eden follow-up report will serve to draw attention to the need for additional research on screwworm genetics and will be a legitimate basis for increased budget requests.

I always look forward to your suggestions and observations, and certainly appreciate your continued interest in the screwworm program.

RALPH A. BRAM
National Research Program Leader
Insects Affecting Man & Animals

cc: w/cpy incoming
L. E. LaChance
O. H. Graham
C. J. Whitten
J. R. Johnston
K. L. Lebsock

United States Department of Agriculture
Agricultural Research Service
Southern Region
Insects Affecting Man and Animals Research Laboratory
1600 SW 23rd Drive
P.O. Box 14565
Gainesville, Florida 32604

June 28, 1982

SUBJECT: Report of the technical panel for the study of reproductive isolation in screwworm populations.

TO: Ralph A. Bram
National Research Program Leader
Insects Affecting Man and Animals
National Program Staff
ARS, USDA
Agricultural Research Center-West
Beltsville, Maryland 20705

THROUGH: Donald E. Weidhaas, Laboratory Director

After reading the report by Drs. Kitzmiller, Markow, and Wallace, I am compelled to voice my opinion on their recommendations. In effect, these distinguished scientists come to the same general conclusions and advanced the same recommendations that have been stated many times in the past by research scientists in ARS. I agree with their evaluation, and I encourage you and others in position to influence the funding of such research to proceed in a concerted effort to expand the research on the taxonomy and genetics of the screwworm fly. This sort of program has been overdue for a long time, at least 20 years, and quite frankly I do not understand why a comprehensive effort to study all aspects of the basic biology of the screwworm is not already in place. Obviously, at times we in USDA have been and continue to be too conservative in our judgement on funding certain types of research.

As you know quite well, it takes a combination of time and effort to accumulate the basic information needed to make meaningful contributions at the applied level of operations by action agencies such as APHIS. I believe that funds expended on this type of program will produce data of great value. The screwworm campaign has served as an outstanding precedent of the value of genetic control in the field of economic entomology, and I hope that when this fly is finally eradicated from North and Central America, we will at least have some idea of the obstacles that were encountered and conquered. Unless we in ARS follow through on some program, resembling the recommendations of the Technical Panel, we will not know why and how the difficulties in the eradication effort were overcome. In the event of failure, we will not know why.

There is not a better case that I can think of where the cost-benefit ratio is better than the screwworm eradication program. I have never met a more dedicated group of people than those involved in that effort. They are efficient and intent on reaching the objective of eradication. However,

they need help in the form of better technology and information on the screwworm fly in a tropical area. Action on several of the recommendations could result in savings of millions of dollars. For example, the development of a genetic sexing system (recommendation #7) would allow a savings of $5-8 million/year. None of the recommendations are "pie in the sky" suggestions; there are precedents for each recommendation. Techniques and protocols for the recommended research are in the scientific literature for other dipterous insects. My point is that in the accumulation of the required basic knowledge, success is assured, if the program is adequately funded. There is no way that Drs. McInnis and Whitten can work effectively on more than two or three of the recommendations.

I urge you to use this report as a basis for the expansion of a program on screwworm genetics. It is my understanding that the "Eden-Lincoln" report was used to justify the expansion of research on the screwworm fly at Mission, Texas several years ago.

If I can be of any assistance, please do not hesitate to call on me.

Sincerely,

Jack Seawright

JACK A. SEAWRIGHT
Research Leaser

RECEIVED AUG 1 1 1982

United States Department of Agriculture | Agricultural Research Service | National Program Staff | Beltsville, Maryland 20705

August 3, 1982

SUBJECT: Report of the Technical Panel for the Study of Reproductive Isolation in Screwworm Populations

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I always look forward to your suggestions and observations, and certainly appreciate your continued interest in the screwworm program.

Ralph

RALPH A. BRAM
National Research Program Leader
Insects Affecting Man & Animals

cc: w/cpy incoming
L. E. LaChance
O. H. Graham
C. J. Whitten
J. R. Johnston
K. L. Lebsock

RECEIVED AUG 1 1 1982

United States Department of Agriculture | Agricultural Research Service | National Program Staff | Beltsville, Maryland 20705

August 3, 1982

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I always look forward to your suggestions and observations, and certainly appreciate your continued interest in the screwworm program.

RALPH A. BRAM
National Research Program Leader
Insects Affecting Man & Animals

cc: w/cpy incoming
L. E. LaChance
O. H. Graham
C. J. Whitten
J. R. Johnston
K. L. Lebsock

Dr. Graham

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

August 6, 1982

Ms. Renee Johansen-Khan
Journal of Medical Entomology
Bishop Museum
P. O. Box 19000-A
Honolulu, Hawaii 96819

Dear Ms. Johansen-Khan:

In accordance with your request I have reviewed the manuscript, "Observations on body temperature of the host and resistance to the tick, Boophilus microplus" and found it to be an unusually well written report of carefully planned and conducted research. The results are clearly presented and meaningful. I recommend publication without revision.

Sincerely,

O. H. Graham

O. H. GRAHAM
Location/Project Leader

Dr. Graham

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

August 12, 1982

SUBJECT: Report on Tests with Ivermectin for Screwworm Control

TO: Dr. Nazario Pineda V., Director
Dr. R. E. Reichard, Acting Co-Director
Comision Mexico-Americana para la
Erradicacion del Gusano Barrenador
Leibnitz No. 20 - 12° Piso
Apartado Postal M-2890
Mexico, D. F. 06000

In February while we had a colony of screwworm flies in the Mission laboratory, Dr. Dennis Ring and Mr. Robert Ramirez evaluated Ivermectin, a new insecticide and anthelminthic, against screwworm larvae in in vitro cultures. Their tests were brief and the results in their report (copy enclosed) are preliminary as the colony was exterminated shortly after they began their tests. The chemical was not as spectacular in their tests as it has been in other tests with other parasites but Ivermectin did appear to be about 10X more effective than coumaphos. If one also takes into account that Ivermectin is usually slower in its action than the conventional insecticides, it continues to be possible that Ivermectin, or a similar product, could be used advantageously in the screwworm eradication program.

Obviously other tests, especially tests using screwworm-infested animals, are needed. Dr. John Spencer at Tuxtla has twice started tests with infested sheep but was interrupted each time. Hopefully he will reinitiate his studies in the near future and will obtain additional information concerning the possible usefulness of Ivermectin. Ear implants, slow-release boluses, and other formulations of Ivermectin have protected domestic animals against several parasites for extensive periods of time, sometimes for several months, and might fully protect animals from screwworm infestation if the species is highly susceptible to the insecticide.

O H Graham

O. H. GRAHAM
Location/Project Leader

Enclosure

cc: w/encl.

Norvan Meyer	R.E. Lowe	J.R. Johnston
Floyd Smith	D.E. Hopkins	V.P. Spencer
W.H. Sudlow	R.A. Bram	H.E. Brown
H.C. Hofmann	C. J. Whitten	D.R. Ring

Preliminary Evaluation of Ivermectin Against the Screwworm

Dennis Ring and Robert Ramirez

Avermectins have an unprecendented potency and spectrum of biological activity (Egerton et al. 1979). Ivermectin[a], 22-23-dihydroavermectin B_1, is a fermentation product produced by the bacterium Streptomyces avermitilis (Actinomycetales: Streptomycetaceae) and it has been shown to be effective in reducing the numbers of parasitic arthropods and nematodes (Egerton et al. 1981). Antibiotics, i.e. streptomycin, chloramphenicol and tetracyclines are obtained from other members of the genus Streptomyces (Smith 1972). Results of preliminary tests using Ivermectin against the screwworm, Cochliomyia hominivorax (Coquerel) (Diptera: Calliphoridae), in vitro are presented in this report.

Methods and Materials

One hundred gm of screwworm starting diet (1 l water, 3 ml formalin, 30 gm dry egg, 5 gm suckle and enough ground lean meat to make a slurry), a modification of the diet reported by Melvin and Bushland (1936), were placed in each of 32 tin pie pans. Pie pans had a bottom diameter of 8.5 cm, top diameter of 12.8 cm and were 3.2 cm high. Each of seven doses of ivermectin and coumaphos (.001, .01, .1, 1, 10, 100 and 1000 ppm), 1 water control and 1 acetone control were mixed into the diet in 2 pie pans. Insecticides were mixed into the diets from lowest to highest concentrations to avoid contamination. Masking tape was placed around the top of the tin pie pans to prevent larval escape.

Screwworm eggs were separated by submerging egg masses in 1% NaOH (sodium hydroxide) in a test tube and 2 water rinses. Black filter paper was placed on the top of the media in 16 of the pie pans (1 of each treatment) and an

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[a]MK-933, Merck Sharp and Dohme Research Laboratories, Divison of Merck and Co. Inc., Rahway, N.J.

estimated 100 eggs were placed on the filter paper in each pie pan using an eyedropper on Feb. 17, 1982. Pie pans were placed on trays in water in a heated vat (37° C). The vat was in a rearing room with a controlled environment with a room temperature of 26° C, 12:12 photoperiod and 70% RH.

A spatula was used to place ca. 100 1st instar larvae in each of the other 16 pie pans on Feb. 18, 1982. These larvae were taken from egg masses that were placed on moist filter paper in a petri dish in an incubator at 37° C on Feb, 17, 1982 to facilatate larval eclosion. These pie pans were also placed in the rearing room in the same manner as the 16 pie pans with filter paper.

Pie pans inoculated with eggs were scored for the number of eggs, larvae eclosed and living larvae on Feb. 19, 1982. Pie pans inoculated with 1st instar larvae were scored for living larvae on Feb. 19, 1982.

Results and Discussion

Only 1 larva out 2097 failed to eclose and this was in the water control (Table 1). Neither insecticide prevented larval eclosion at any concentration tested.

In the test involving eggs on filter paper, living larvae were found in all concentrations of ivermectin at or below .01 ppm but all larvae were dead in all concentrations at and above .1 ppm (Table 1). Similar results were obtained in the pie pans treated with coumaphos and eggs except living larvae were found in the .1 ppm treatment. This indicated that ivermectin was effective against the screwworm at a concentration 10 times less than coumaphos.

Results obtained for 1st instar larvae were identical to those for eggs when coumaphos was used in the diet (Table 1). There was a slight difference between ivermectin treatments for eggs and for larvae since living larvae were found in the .1 ppm and 1 ppm concentrations. However, very few of the larvae at these

2 concentrations were alive and these were sluggish. The treatments involving eggs were evaluated after 48 h while those involving 1st instar larvae were evaluated after 24 h. This combined with the low numbers and sluggish larvae in the .1 ppm and 1 ppm concentrations of ivermectin in the larval test indicated that after 48 h results of treatments with larvae would have been identical to those with eggs.

Larvae were found to be healthy and active in all 4 of the water and acetone control treatments (Table 1).

Conclusions

Results of these preliminary test indicated that ivermectin may be effective against the screwworm at concentrations 10X less that coumaphos. Further and more detailed experiments in vitro and in vivo are needed before ivermectin can be used against the screwworm.

References Cited

Egerton, J. R., E. S. Brokken, D. Suhayda, C. H. Eary, J. W. Wooden and R. L. Kilgore. 1981. The Antiparasitic activity of ivermectin in horses. Veterinary Parasitology 8: 83-8.

Egerton, J. R., D. A. Ostlind, L. S. Blair, C. H. Earg, D. Suhayda, S. Cifelli, R. F. Riek and W. C. Campbell. 1979. Avermectins, new family of potent anthelmintic agents: efficacy of the B_1 a component. Antimicrobial Agents and Chemotherapy 15: 372-8.

Melvin, R. and R. C. Bushland. 1936. A method of rearing Cochliomyia americana C. and P. on artificial media. U.S. Bur. Entomol. Plant Quar. {Rep.} E T - 88. 2pp.

Smith, A. L. 1972. Microbiology and Pathology. 10th ed. C. V. Mosby Co. Saint Louis. p.7.

Table 1. - Results of tests comparing the effectiveness of ivermectin vs. coumaphos against screwworm eggs and 1st instar larvae *in vitro*.

Treatment[a]	Concentration in ppm	Eggs[b]			1st Instar Larve
		Number of Eggs	Number Eclosed	Living[a] Larvae	Living[a] Larvae
Iv	.001	172	172	Y	Y
Iv	.01	186	186	Y	Y
Iv	.1	103	103	N	Y very few alive, sluggish
Iv	1	95	95	N	Y very few alive, sluggish
Iv	10	114	114	N	N
Iv	100	82	82	N	N
Iv	1000	140	140	N	N
Cu	.001	111	111	Y	Y
Cu	.01	120	120	Y	Y
Cu	.1	59	59	Y	Y
Cu	1	166	166	N	N
Cu	10	157	157	N	N
Cu	100	222	222	N	N
Cu	1000	148	148	N	N
H_2O	-	125	124	Y	Y
Ac	-	127	127	Y	Y

[a]Abbreviations are as follows: Ac = acetone control, Cu = coumaphos, H_2O = water control, Iv = Ivermectin, Y = yes and N = no.

[b]N = 2097 total eggs, 2096 with larval eclosion.

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

August 24, 1982

Dr. D. L. Bull, Editor
Southwestern Entomologist
P. O. Drawer DG
College Station, TX 77841

Dear Don:

The eclosed manuscript, "Evaluation of the Screwworm Adult Suppression System (SWASS) on the Pacific Coast of Mexico", is resubmitted for your further consideration for publication in the Southwestern Entomologist. Since this manuscript was rejected in February, Dr. Del Var Petersen has revised it so as to present the data graphically. We hope that the paper can now be published promptly as almost two years have passed since the test was conducted and the results are important to the ongoing screwworm eradication program.

Sincerely,

Hugh

O. H. GRAHAM
Location/Project Leader

cc: Del Var Petersen
R. A. Hoffman
W. F. Chamberlain

Dr Graham

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

August 24, 1982

SUBJECT: Joint Research - Methods Development Meeting in Tuxtla Gutierrez

TO: Scientists in Screwworm Research

Dr. H. C. Hofmann and I have been able to arrange for a meeting of the scientific staffs of the Methods Development and ARS groups in Tuxtla on September 8. As has become customary, we will review activities of the two groups, technical problems of the eradication program, and plans for activities. On September 9, Dr. Bram would like to discuss the ARS program in more detail with ARS scientists.

In preparation for the meeting I would like for each ARS scientist to prepare a written outline of his or her planned research for the period September 1, - December 31, 1982. This plan should be succinct but include enough detail for it to be obvious whether or not the goals are achievable and how the research relates to program needs, either short term or long term.

O H Graham

O. H. GRAHAM
Location/Project Leader

cc:

Bram	Sudlow
Hoffman	Brenner
La Chance	Brown
Petersen	Mackley
Snow	Mangan
Whitten	Ocampo
Meyer	Peterson
Hofmann	Ring
Reichard	Spencer
Lowe	Vasquez

United States Department of Agriculture
Agricultural Research Service
North Central Region Metabolism and Radiation Research Laboratory
P.O. Box 5674
State University Station
Fargo, North Dakota
58105

RECEIVED SEP 0 2 1982

August 30, 1982

SUBJECT: Technical Comments for Science

TO: A. C. Bartlett
R. A. Bram
R. J. Gagné
O. H. Graham
D. O. McInnis
J. A. Seawright
C. J. Whitten

Over the past few months I have been in touch with Mrs. Ruth Kulstad, a senior editor for Science, on numerous occasions. Essentially, we had to further cut down the length of our technical comments and also attempt to answer the comments of several reviewers. You may recall that one reviewer wrote 11 pages of comments that were not particularly favorable to our point of view--while 2 other reviewers were more reasonable.

Many of the changes were handled over the telephone with Mrs. Kulstad and even then when the galley proofs arrived I found that additional changes had been made. Dr. Whitten and I went over the galley and our final draft rather carefully and again I called Mrs. Kulstad to negotiate leaving certain things in. The result is the "corrected galley" enclosed. To the best of my knowledge this is the version that will appear in Science fairly soon followed by the final comments of Richardson et al.

I want to thank all of you for your help in this venture and for submitting so many interesting and valuable comments on the original article. Although valid points submitted by many of you were dropped in the process of going through about 8 drafts, I do have a complete file of your original comments. Again, my sincere thanks for your help.

Leo E. LaChance

LEO E. LaCHANCE
Research Geneticist -
National Technical Advisor
for Insect Genetics

Enclosure

Enclosure filed in folder with other mss. correspondence etc re the Richardson article

United States Department of Agriculture
Agricultural Research Service
Southern Region
Oklahoma-Texas Area
Screwworm Research
P. O. Box 986
Mission, TX 78572

SUBJECT: Request for Personnel Action

TO: Personnel Officer
Southern Regional Administrative Office
New Orleans, Louisiana

THROUGH: J. R. Johnston
Area Director
Oklahoma-Texas Area Office
College Station, Texas

We request the following action for Recruit action for Research Geneticist, (Insects) GS-11 Research Associateship, Vacancy. (Replacement for D. O. McInnis).

/ /	Appointment	/ /	Promotion
/X/	Recruit	/ /	Extension of Appointment
/ /	Resignation	/ /	Conversion
/ /	Termination	/ /	Change in Tour of Duty
/ /	Other		

Enclosed is the following material:

/X/	SF-52	/X/	KSA Sheet
/X/	AD-332	/ /	SEA-368
/X/	Position Description(s)	/ /	SF-46
/ /	SF-171	/ /	SF-39A
/ /	Other		

We will appreciate your further handling.

O H Graham

O. H. GRAHAM
Location/Project Leader

mailed to College Station 8/31/82
see Personnel folder for copies of enclosures

United States Department of Agriculture
Agricultural Research Service
North Central Region Metabolism and Radiation Research Laboratory
P.O. Box 5674
State University Station
Fargo, North Dakota
58105

August 31, 1982

SUBJECT: Research Plans September 1 - December 31, 1982

TO: Dr. O. H. Graham, Research Leader
Screwworm Research Laboratory
Post Office Box 986 Moore Air Base
Mission, Texas 78572

In cooperation with a chemist, proceed with chemical isolation of dried blood attractant(s) using an olfactometer bioassay to monitor attractant activity in isolated fractions. Attractant was recovered in the steam distillate of crude reconstituted blood but lost after lyophilization of the distillate. Attempts to extract attractant with nonpolar solvents failed: either it remained in particulate or aqueous residues or activity was recovered only after recombination of polar and nonpolar solvent fractions. Chromatography of the steam distillate on Porapak Q will be done, using polar solvents (methanol-water), and subsequent fractionation methods will be developed based on the attractant recovery pattern obtained after this chromatographic separation.

The attractant in reconstituted dried blood lures females but not males. Exposure of females to fresh unattractive blood prior to bioassay obliterates attraction of vitellogenic-stage insects to the dried blood but only slightly and transiently reduces the response of gravid females. Thus, the response profile is consistent with that obtained to the sentinel sheep wounds used to monitor field populations.

Further work is needed to define the conditions required for optimal wound attractancy and to develop methods to standardize these conditions before the wound can be considered a source of attractant suitable for chemical isolation studies. This work is hampered in part by variability among batches of insects in responsiveness to attractant, and more than half of this variability is traceable to as yet unknown factors operating prior to the pupal stadium. Chemical isolation of the dried blood attractant is feasible because it is stable in storage for at least 3.5 years, available in quantity so that biological and chemical studies can be done, using a single blood batch, and, unlike the wound fluids tested thus far, it produces a quantitative relationship between attractant concentration and response in olfactometer tests. Thus, the crude blood can be used as a reference standard to monitor sensitivity of different batches of insects used for bioassay and to estimate attractant yields following fractionation procedures.

Leslie Hammack

Leslie Hammack, Research Entomologist
Insect Physiology/Biochemistry Section

cc: Dennis R. Nelson
James C. Whitten